Kaizen

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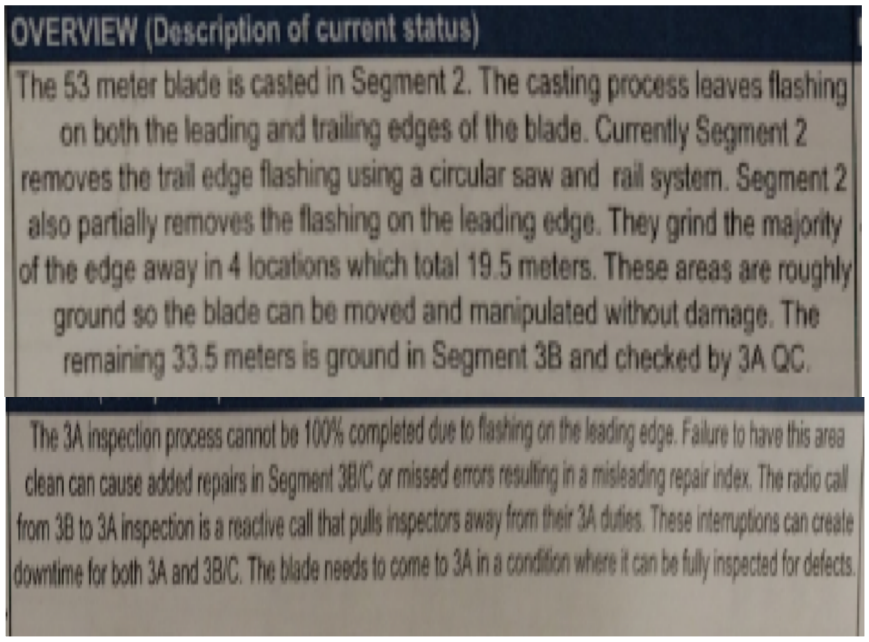
Part I: Overview of Business

Size of facility: 311,000 square-feet(2007); expansion in 2008 to nearly 650,000 square-feet. Workforce: Nearly 500 employees Production: IntegralBlades® for Siemens' 2.3-MW and 3.0-MW wind turbines More than 9,000 IntegralBlades® delivered to projects in the United States, Canada, Chile, Peru and Brazil . The primary materials used in manufacturing the wind turbine blades are epoxy, fiberglass, balsa wood and paint A 53-meter turbine blade is 174 feet long, which is nearly half a football field, and weighs approximately 10 tons. Supply chain: More than 80 percent of the direct materials used to manufacture the blades are provided in the U.S.

Part II: Job Specifics


OVERVIEW (Description of current status)

The 53 meter blade is casted in Segment 2. The casting process leaves flashing on both the leading and trailing edges of the blade. Currently Segment 2 removes the trail edge flashing using a circular saw and rail system. Segment 2 also partially removes the flashing on the leading edge. They grind the majority of the edge away in 4 locations which total 19.5 meters. These areas are roughly ground so the blade can be moved and manipulated without damage. The remaining 33.5 meters is ground in Segment 3B and checked by 3A QC.

The 3A inspection process cannot be 100% completed due to flashing on the leading edge. Failure to have this area clean can cause added repairs in Segment 3B/C or missed errors resulting in a misleading repair index. The radio call from 3B to 3A inspection is a reactive call that pulls inspectors away from their 3A duties. These interruptions can create downtime for both 3A and 3B/C. The blade needs to come to 3A in a condition where it can be fully inspected for defects.

Part III: Introduce the Problem

Inspection process of the Blade cannot be performed 100% due to Flashing on the leading edge of the blade. Failure to completely remove flashing can lead to hidden imperfections that can mislead repairs and also add more. This then can cause down time in the flow of the blade throughout the plant. It also needs to be done in one of two different places in the plant. Currently it's done in 2 locations.

Part IV: Background

•Students need to be front loaded on what the leading edge is, flashing, what processes are performed. The team is focusing on how and where the leading edge is ground and or cut. The process to grind the edge can be changed to reduce time, reduce dust, or improve ergonomics. The team needed to collect current time of process, how much dust was created, and what other tools could be used to perform said process.

Part V: Business Solution

A team was created of a quality inspector, people from both areas being affected by this process, Lean specialist, two engineers and extern. Goals were created for quality, cost and safety. Goals: remove 100% of flashing prior to getting inspected, reduce the time it takes to remove lead edge flashing by 50%, implement 5 safety improvements. Lean methodology was used to achieve the goals and steps to take in this matter.

Part VI: Student Solutions

With front loading the students on the process and having them understand the concept of the process and what the plant is looking for. I believe the students would come up with solutions to use different types of tools for cutting and ways to control dust.